

**Section 1: Combining Like Terms.** Combine all like terms in the expressions below.

1.)  $5x - 7 + 3x - 12$

$8x - 19$

2.)  $-4 - 7x + 15 + 3x$

$-4x + 11$

3.)  $x^2 - 3x - 4 + x^2 + 7x - 18$

$2x^2 + 4x - 22$

4.)  $-3x^2 - 4x + 10x^2 - 10 + 8x - 14$

$7x^2 + 4x - 24$

**Section 2: Distributive Property.** Apply the distributive property and simplify if necessary.

5.)  $3(4x - 8)$

$12x - 24$

6.)  $-4(7 - 2x)$

$-28 + 8x$   
or  
 $8x - 28$

7.)  $3x(x - 9)$

$3x^2 - 27x$

8.)  $-4x(11 - 3x)$

$-44x + 12x^2$   
or  
 $12x^2 - 44x$

9.)  $-4(4 - 8x - x^2)$

$-16 + 32x + 4x^2$   
or  
 $4x^2 + 32x - 16$

10.)  $5 - 2(2x - 12)$

$5 - 4x + 24$   
 $-4x + 29$

11.)  $3(x^2 - 4x - 12) + 2(x^2 + x - 6)$

$3x^2 - 12x - 36 + 2x^2 + 2x - 12$

$5x^2 - 10x - 48$

12.)  $2x(x - 7) - 2(x^2 + 3x + 7) + 5(x^2 - 3)$

$2x^2 - 14x - 2x^2 - 6x - 14 + 5x^2 - 15$

~~2x^2 - 14x - 2x^2 - 6x - 14 + 5x^2 - 15~~  
 $5x^2 - 20x - 29$



**Section 3: Polynomial Operations.** Expand and simplify the following polynomials.

13.)  $(x+4)(x+4)$

$$x^2 + 4x + 4x + 16$$

$$\boxed{x^2 + 8x + 16}$$

14.)  $(x-7)(x+7)$

$$x^2 + 7x - 7x - 49$$

$$\boxed{x^2 - 49}$$

15.)  $(2x+7)(x-3)$

$$2x^2 - 6x + 7x - 21$$

$$\boxed{2x^2 + 1x - 21}$$

16.)  $(3x-5)(4x-11)$

$$12x^2 - 33x - 20x + 55$$

$$\boxed{12x^2 - 53x + 55}$$

17.)  $-3(x-9)(x+2)$   
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$$-3(x^2 + 2x - 9x - 18)$$

$$-3(x^2 - 7x - 18)$$

$$\boxed{-3x^2 + 21x + 54}$$

18.)  $4(x+7)^2 - 7$

$$4(x+7)(x+7) - 7$$

$$4(x^2 + 7x + 7x + 49) - 7$$

$$4(x^2 + 14x + 49) - 7$$

$$4x^2 + 56x + 196 - 7$$

$$\boxed{4x^2 + 56x + 189}$$

\*19.)  $(x^2 + 2x - 8)(x^2 - 2x + 1)$

	$x^2$	$2x$	$-8$
$x^2$	$x^4$	$2x^3$	$-8x^2$
$-2x$	$-2x^3$	$-4x^2$	$+16x$
$1$	$x^2$	$2x$	$-8$

$$\boxed{x^4 - 11x^2 + 18x - 8}$$